



AUBURN UNIVERSITY

LoNo Bus Testing and Component Assessment Program



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SAMUEL GINN
COLLEGE OF ENGINEERING

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Outline

- Auburn at a Glance
- Current Status
- Future Plans

Auburn University

U.S. NEWS & WORLD REPORT
ranks the Samuel Ginn College of
Engineering

33rd

(among public universities in the nation)

\$150M

in Active Engineering Research
Contracts

R1

Doctoral Research
University



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Auburn University – Areas of Excellence

Areas of synergy with LoNo CAP and Bus Testing include:

- National Center for Asphalt Technology (NCAT)
- Program for Advanced Vehicle Evaluation (PAVE)
- GPS and Vehicle Dynamics Laboratory (GAVLAB)
- NSF Center for Advanced Vehicle and Extreme Environment Electronics (CAVE³)
- HVAC Assessment in the Environmental Wind Tunnel Facility
- Battery, Fuel Cell, Hybrid Vehicle and Power Electronic Testing Facilities
- Cyber Research Center & McCrary Institute for Cyber and Critical Infrastructure Security
- Wireless Engineering Research and Education Center (WEREC)
 - Southern Alliance for Advanced Vehicle manufacturing

National Center for Asphalt Technology

- **1.7 mile test track has supported more than 9 million miles of transportation research to date**
- **Utilization will be Extended to LoNo component and bus testing**



Program for Advanced Vehicle Evaluation

- **Type II, III, and IV SAE/TMC fuel economy quantification**
 - **Component durability studies**
- **Vibration and driver fatigue research**
- **Telematics-based field testing**

GPS and Vehicle Dynamics Laboratory

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- **GPS receivers and software for difficult signal tracking environments**
 - **Multi-sensor navigation systems with various sensor suites**
 - **Trajectory classification**
 - **Predictive object tracking**
 - **Autonomous driving**
 - **Model-based simulation tools**

GPS and Vehicle Dynamics Laboratory

Autonomy and Assured Positioning, Navigation, and Timing



Automated Driver Assistance Systems:

- Successful on-highway, autonomous, heavy duty vehicle platooning (Levels I+II)
- Platoon average 6-9% fuel economy benefit

McCrary Institute for Cyber and Critical Infrastructure Security

- Secure systems engineering
- Infrastructure security, protection and operations
 - Cloud security and forensics
- Smart grid research and development
 - Artificial intelligence
 - Manufacturing security

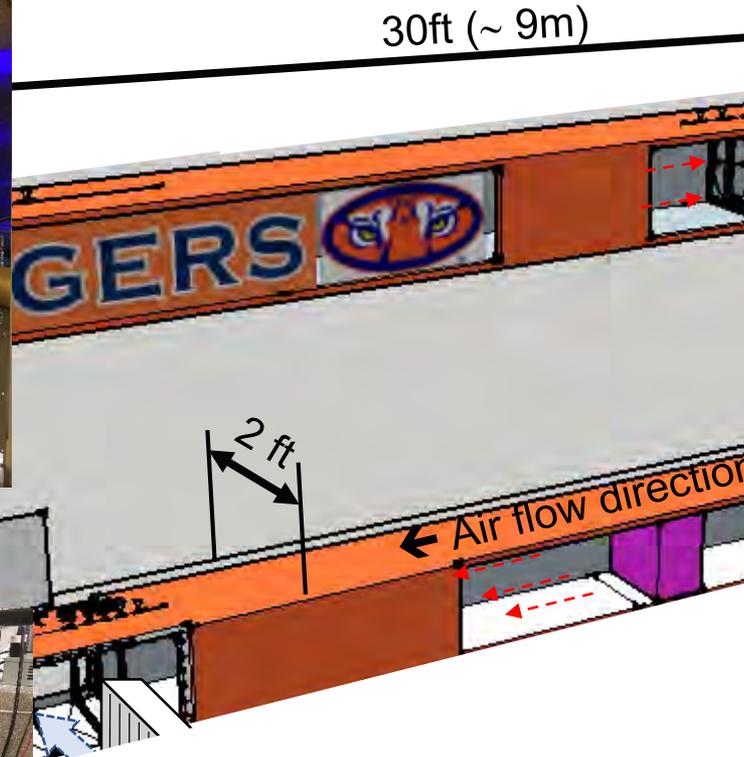
Partnered with the DHS, NSA, CIA, NSF, and DoD

Heat Exchanger Performance Assessments

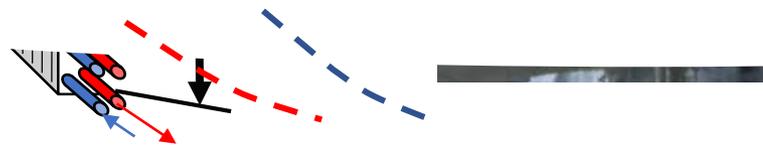
Compressor power quantification



Frost and Defrost Testing



IR heat exchanger imaging



Micro-Borescope for component diagnostics



Status – LoNo Component Assessment Program

Initial allotments are strictly aligned to physical component testing

Gap exists between areas of research excellence and readiness for component testing

- Test protocols must be designed
- Some testing capabilities must be brought to proper scale for bus components
- Administrative support is required

Current funding allotment does not allow fiscal outlay for these expenditures

- Initial funding allotment: \$1.5M
- Additional funding provided: \$3.0M
 - Amount spent to date: \$0

Status – Establishing a LoNo Bus Testing Facility

Received a federal allotment for the design and cost estimation of a LoNo Bus testing facility at Auburn

- Started June 1, 2019

Elements included in the design and cost estimate:

- Infrastructure alterations
- Construction
- Equipment
- Personnel plan

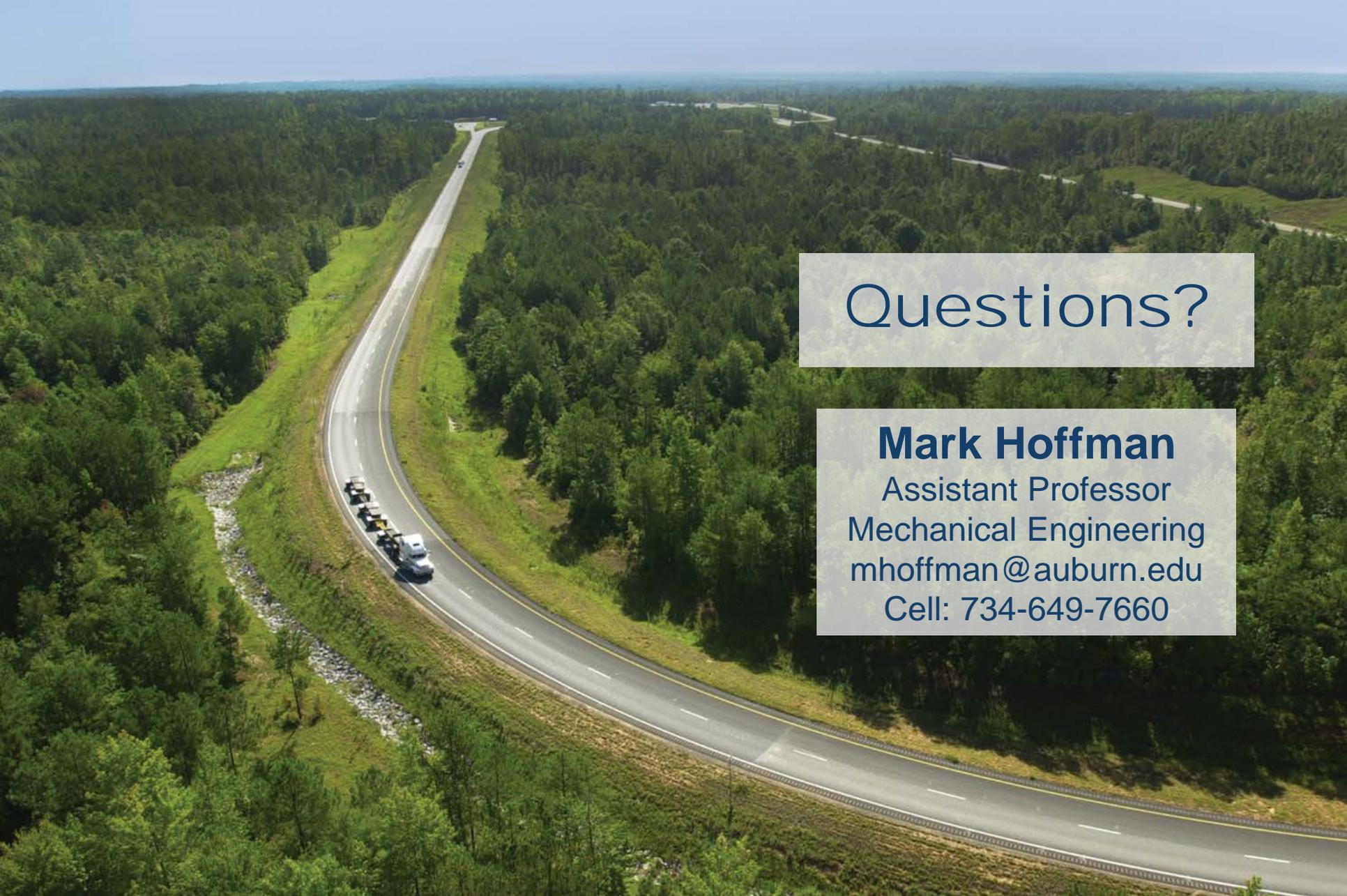
Currently developing the project management plan and are in legal negotiations with a third party design and construction firm

Looking Ahead



Auburn is currently establishing a center for LoNo Component Assessment and Bus Testing

Fully prepared to ramp component assessment activities now, but need a different funding allocation to bridge the gap from research capabilities to testing services



Questions?

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